CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/KRC/WMM/Gradation/2012-13

02.04.2013

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **M/s. K.R. Constructions**, Bangalore.

Name of Work : Improvements of roads and drains in 2nd & 3rd Cross, Shanthivana in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE/KOD.SUB.DIV/233/2012-13 Dated: 30.03.2013

Date of Testing : 02.04.2013

Material : WMM

Sample Location : WMM Mix Plant

Oven Dry Wt (gm): **25315**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	898	898	3.5	96.5	95-100
22.4	7394	8292	32.8	67.2	60-80
11.2	5023	13315	52.6	47.4	40-60
4.75	4975	18290	72.2	27.8	25-40
2.36	2568	20858	82.4	17.6	15-30
0.600	2203	23061	91.1	8.9	8-22
0.075	1879	24940	98.5	1.5	0-8

Note:

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Building & Highway Material Testing Laboratory

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/KRC/WMM/AIV/2012-13 02.04.2013

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**M/s. K.R. Constructions,** Bangalore.
Name of the Work	Improvements of roads and drains in 2nd & 3rd Cross, Shanthivana in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/KOD.SUB.DIV/233/2012-13 Dated: 30.03.2013
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	02.04.2013

Sl No.	Details	Trial No. 1	2	3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	377	381	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	79	83	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	298	298	298	
4	Aggregate Impact value = percent fines	20.95	21.78	22.60	
	100* (W_2/W_1)%				21.78

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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(Building, Geo-Tech & High way Material Testing Research Laboratory)

Engineering Project Consultants

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Job No.: CTCE/BBMP/W.No.08/KRC/WMM/S-T/2012-13 02.04.2013

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**M/s. K.R. Constructions,** Bangalore.
Name of Work	Improvements of roads and drains in 2nd & 3rd Cross, Shanthivana in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/KOD.SUB.DIV/233/2012-13 Dated: 30.03.2013
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Wet Mix Macadam
Date of Testing	02.04.2013

Passing through IS Sieve, mm	Retained On IS Sieve, mm	Weight of Sieved Fraction (W) gms		Proportion of Size range in the sample, X = 100xW/ΣW		Weight of 200 pieces of aggregates of the range, (P) in gms		Thickness gauge size, mm	Weight of flaky particles (F)in gms		Percentage by Weight of flaky aggregates in gms Y= 100xF/P	Weighed Percentage of flaky aggregates in gms XY=X × Y	Weight of fraction consisting of at least 200 Pieces in gms		Length gauge size in mm	Weight of aggregates in each fraction retained on Length gauge in gms	
63.00	50.00	W1		X1		P1		33.90	F1				P1		-	E1	
50.00	40.00	W2	2867	X2	22.31	P2	2812	27.00	F2	398	14.15	315.79	P2	2812	81.00	E2	265
40.00	31.50	W3	2398	X3	18.66	P3	2315	21.50	F3	326	14.08	262.79	P3	2315	58.00	E3	212
31.50	25.00	W4	2237	X4	17.41	P4	2158	16.95	F4	287	13.30	231.52	P4	-	-	E4	-
25.00	20.00	W5	1632	X5	12.70	P5	1596	13.50	F5	205	12.84	163.13	P5	1596	40.50	E5	204
20.00	16.00	W6	1337	X6	10.40	P6	1302	10.80	F6	168	12.90	134.25	P6	1302	32.40	E6	178
16.00	12.50	W7	898	X7	6.99	P7	788	8.55	F7	121	15.36	107.31	P7	788	25.50	E7	142
12.50	10.00	W8	789	X8	6.14	P8	709	6.75	F8	86	12.13	74.48	P8	709	20.20	E8	98
10.00	6.30	W9	692	X9	5.39	P9	614	4.89	F9	99	16.12	86.83	P9	614	14.70	E9	81
		Σ W	**12850.0**								**ΣXY**	**1376.10**	**ΣP**	**10136.0**		**ΣE**	**1180.0**

Result : Flakiness Index = **13.76%**

Elongation Index = **11.64%**

Result : Combined Flakiness & Elongation index 25.40%

Note:

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Job No.: CTCE/BBMP/W.No.08/KRC/WMM/AL/2012-13

02.04.2013

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **M/s. K.R. Constructions,** Bangalore.

Name of Work : Improvements of roads and drains in 2nd & 3rd Cross, Shanthivana in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE/KOD.SUB.DIV/233/2012-13 Dated: 30.03.2013

Date of Testing : 02.04.2013

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	22.35	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CTCE/BBMP/W.No.08/KRC/SDBC/Bitumen/2012-13 08.04.2013

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AASHTO T 164 & AASHTO T 30

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**M/s. K.R. Constructions,** Bangalore.
NAME OF THE WORK	Improvements of roads and drains in 2nd & 3rd Cross, Shanthivana in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	AEE/KOD.SUB.DIV/233/2012-13 Dated: 30.03.2013
SAMPLE I/D	2nd & 3rd Cross, Shanthivana, Ward No. 08
DATE OF TESTING	08.04.2013

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475.5	474.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	24.5	25.50
7. Bitumen content in %	4.90	5.10
8. Average	**5.00**	

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Job No.: CTCE/BBMP/W.No.08/KRC/SDBC/Gradation/2012-13 08.04.2013

BITUMEN CONTENT AFTER GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AASHTO T 164 & AASHTO T 30

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**M/s. K.R. Constructions,** Bangalore.
NAME OF THE WORK	Improvements of roads and drains in 2nd & 3rd Cross, Shanthivana in Ward No. 08, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	AEE/KOD.SUB.DIV/233/2012-13 Dated: 30.03.2013
SAMPLE I/D	2nd & 3rd Cross, Shanthivana, Ward No. 08
DATE OF TESTING	08.04.2013

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-4 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	25.87	5.44	5.44	94.56	90-100
4.75	252.36	53.07	58.51	41.49	35-51
2.36	45.79	9.63	68.14	31.86	24-39
1.18	59.24	12.46	80.60	19.40	15-30
0.3	42.16	8.87	89.47	10.53	9-19
0.075	29.74	6.25	95.72	4.28	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-4 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	33.16	6.99	6.99	93.01	90-100
4.75	235.87	49.71	56.70	43.30	35-51
2.36	66.49	14.01	70.71	29.29	24-39
1.18	50.12	10.56	81.27	18.73	15-30
0.3	34.79	7.33	88.60	11.40	9-19
0.075	25.92	5.46	94.07	5.93	3-8

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